23d Congress, 2d Session. [Doc. No. 103.] Ho. of Reps. War Dept.

HARBORS—RIVER DELAWARE.

LETTER

FROM

THE SECRETARY OF WAR,

Transmitting a report, &c. of the condition of the harbors in the river Delaware.

January 27, 1835.
Read, and laid upon the table.

Department of War,
January 23, 1835.

Sir: I have the honor to transmit a report from the Chief Engineer, of this date, furnishing a copy of Captain Delafield's report on the condition of the harbors in the river Delaware, accompanied by an estimate for the repair and preservation of the same, as called for by the resolution of the House of Representatives of the 20th instant.

Very respectfully, I am, sir,
Your obedient servant,
MAHLON DICKERSON,
Acting Secretary of War.

Hon. John Bell,
Speaker of the House of Representatives.

Engineer Department,
Washington, January 23, 1835.

Sir: In answer to the resolution of the House of Representatives of the 20th instant, I have the honor to lay before you a copy of Captain Delafield's report on the condition of the harbors in the river Delaware, with an estimate annexed, for carrying into effect the system of operations recommended therein.

I am, very respectfully, sir,
Your most obedient servant,
C. GRATIOT, *Chief Engineer.*

Hon. Lewis Cass,
Secretary of War.

[Gales & Seaton, print.]

Memoir on the progress of the operations at the harbors of Marcus Hook, Port Penn, Newcastle, and Chester, on the Delaware river, during the year ending September 30, 1833.

These harbors were originally constructed by the States of Pennsylvania and Delaware, as a protection to the commerce of the Delaware river during that season of the year when running or drift ice would destroy any vessel at anchor in the stream. The title to this property and jurisdiction were ceded to the United States as early as 1789, for the purpose of enabling the United States to "carry into complete effect" that provision of the constitution "regulating the commerce of the Union," and accepted under a provision of the act of Congress passed on the 7th of August, 1789, further providing that, "when necessary, the United States should rebuild, and keep in good repair, the public piers in the Delaware river," &c.

These harbors, formed of artificial piers constructed of timber, earth, and a small quantity of stone, were repaired under an act of Congress of the 6th April, 1802, and 2d March, 1827. In 1829 appropriations were made for extensive repairs of most of these artificial harbors, amounting to $34,411 67, at which time (I am informed) a change was made in the plan, connecting the piers with each other, and with the shore, thus forming an enclosed harbor, in which there could be no current on either the flood or ebb tide. To perfect this plan of an enclosed harbor, appropriations have been made annually from 1829 to the past year, the whole of which have been expended in excavating, by means of a steam dredging machine, the deposite from within the harbor, and repairing the wood work of the piers. These last appropriations amount to $28,000.

A few years sufficed to prove the error of this change in the original plan. The result has been to cause all the harbors, where it was adopted, to fill with the earthy deposite brought down the Delaware by the annual floods and daily tides, as, also, the shores above and below each harbor, to such an extent that at present the low water mark is on a line with the outer piers, (nearly,) where formerly there was twenty feet water at low tide. The use of the harbors is, in consequence, lost to the commerce of the river.

It was supposed that the steam dredging machine would be sufficient to excavate the harbors, and from year to year remove any deposite made within the year. It has been found, however, that the same cause that operated to destroy the harbors produces a like result in the course of two years after the machine has accomplished all it was designed to effect, and that, instead of one steam dredging machine being sufficient to accomplish the object for all the harbors, one is necessary at each.

Under these circumstances, I cannot recommend a continuance in the plan now in the course of execution, believing that by it the object in view cannot be accomplished, and that, when finished, even by increased machinery, it will not answer a permanent good. The minimum estimate presented for the service of the coming year is to continue the operations upon the present plan.

I cannot too strongly urge that it be abandoned, and that the harbors be rebuilt by sinking new piers in advance of the present ones, repair

the outer piers from low water mark up, and cut away all the work connecting them with the shore, to allow the current to flow through and prevent any further deposite, and probably remove the present earth formation to the depth to which it may be found practicable to cut down these connecting wharves.

In forming the new piers, care being taken to give such slope that no eddy is produced to cause a deposite, and building the whole from the lowest water level with large masses of stone, united with metal, thereby rendering the whole permanent and durable; all that part below low water being built of timber filled in with stone, in the usual way of wharf building. The durability of this part of the proposed improvement has been well tested at the harbor of Port Penn, the piers of which were built by Delaware about eighty years since, and are, to this day, perfectly sound below the low water mark.

It is not desirable that an appropriation should be made for accomplishing the whole of these improvements in one year. I would advise that one harbor be first repaired in the manner recommended, during the construction of which experience would be gained that would not only be productive of greater perfection in the workmanship, but economy in the application of the means for the others.

During the first year, and as soon as practicable, the wharf work connecting the piers with the shore should be removed at each of the harbors. This work must be done, even if the present plan of improvement, by excavating, is persevered in.

During the year ending 30th September, the operations have been confined principally to the harbor of Marcus Hook, from which 15,369 cubic yards of earth have been excavated and removed, forming a safe and secure harbor for about twenty sail of vessels. Some progress has been made in repairing one of the outer piers forming this harbor, using large masses of granite, united by copper bolts, for all that part above low water mark, and the connexion between the two outer piers removed, the good effects of which are already apparent.

At Chester some repair has been made to the wood work, by securing the mooring posts and fenders.

A hydrographic survey is now making to furnish the information for adjusting the direction of the new piers, should Congress think proper to authorize their construction, instead of the plan now under construction.

RICH'D DELAFIELD,
Captain of Engineers.

NEWCASTLE, *November* 1, 1833.

The maximum estimate presented for the service of the year 1834 is calculated to effect the improvements now submitted for your consideration.

RICH'D DELAFIELD,
Captain of Engineers.

To Brig. Gen. CHARLES GRATIOT,
Chief Engineer.

ESTIMATE of funds requisite for the operations at the harbors of Newcastle, Marcus Hook, Chester, and Port Penn, during the year 1834, *exhibiting, in detail, the nature, extent, and cost of the several objects of contemplated expenditure.*

Nature of materials, workmanship, and contingencies, embraced in the intended application of the funds estimated for.	Extent.	Cost.
One engineer at $50 per month, - -	12 mos.	$600 00
One smith at 35 " - -	12 "	420 00
5 laborers at 30 " - -	10 "	1,500 00
Wood at 3 50 per cord, - -	200 cords	700 00
Repairs of machine, - - - -	- -	250 00
Stationery and contingencies, - -	- -	50 00
Superintendent, - - - - -	12 mos.	1,098 00
Commission on disbursing, 2½ per cent., -	- -	115 45
Aggregate, - - - - -	- -	4,733 45
Removal of wharf work connecting piers at the harbor of Newcastle, - -	2,000 c. yds.	800 00
Removal of wharf work connecting piers at the harbor of Marcus Hook, - -	1,500 "	600 00
Hemlock timber, cubic feet, - - -	19,570	1,957 00
White pine plank, feet, b. m. - -	43,200	648 00
Iron bolts, lbs. - - - - -	14,400	1,008 00
Spikes, " - - - - -	2,400	168 00
Workmanship, laying timber and plank, -	- -	3,500 00
Hire of 4 anchors and cables, - - -	- -	200 00
Double purchases, - - - -	- -	200 00
Ring bolts and other fasts, - - -	- -	40 00
Pumps, - - - - - - -	- -	200 00
Stone, - - - - - - - -	1,382 tons	2,764 00
Do. - - - - - - - -	1,300 per's	1,625 00
Do. - - - - - - - -	592 "	5,920 00
Masonry, - - - - - -	3,077 "	3,965 50
Cutting stone, - - - - -	10,000 feet	2,500 00
Clamps, - - - - - -	1,500 lbs.	375 00
Hydraulic cement, - - - -	888 bbls.	2,432 00
Labor, - - - - - - -	1,800 days	1,800 00
Contingencies, - - - - -	- -	1,000 00
		31,702 50
Maximum estimate, - - -	- -	$36,435 95